

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A ~~multilayer coating for a~~ carbon-containing component comprising a protective coating, wherein the carbon-containing component includes graphite, amorphous carbon, carbon fibers, carbon-carbon composites, or a combination thereof; and
- 5 ~~wherein the protective coating comprising comprises at least two layers, wherein each of said layers comprises a~~ material selected from the group consisting of:
- 10 non-stoichiometric compounds of silicon and carbon;
 compounds of silicon, oxygen, and carbon;
 compounds of silicon, oxygen and nitrogen;
 compounds of silicon, nitrogen, and carbon;
 compounds of silicon, oxygen, nitrogen, and carbon; and
 silicon.
- 2-4. (Cancelled)
5. (Currently Amended) The carbon-containing component ~~coating of claim 1, wherein the carbon-containing component comprises a carbon-carbon composite material~~ said protective coating has a coefficient of thermal expansion which is less than the coefficient of thermal expansion of silicon carbide (SiC).
- 6-9. (Cancelled)

10. (Currently Amended) The carbon-containing component
~~coating of claim 1 claim 5~~, wherein carbon-containing component comprises a
plate-fin heat exchanger.

11. (Currently amended) The carbon-containing component
~~coating of claim 1~~ wherein said protective coating has a graded composition
through its thickness.

12. (Canceled)

13. (Currently amended) A ~~multilayer coating for a~~ carbon-
containing component comprising a protective coating, wherein the carbon-
containing component includes graphite, amorphous carbon, carbon fibers,
carbon-carbon composites, or a combination thereof; and

5 wherein the protective coating comprises ~~comprising at least two layers,~~
~~wherein each of said layers comprises a~~ material selected from the group
consisting of:

silicon (Si);

silicon carbide (SiC_y); silicon oxycarbide (SiO_xC_y);

10 silicon oxynitride (SiO_xN_z);

silicon carbonitride (SiC_yN_z); and

silicon oxycarbonitride ($\text{SiO}_x\text{C}_y\text{N}_z$);

15 wherein $x < 2$, $y < 1$ and $z < 4/3$, and at least one of x, y, and z is
greater than zero, and wherein the coefficient of thermal expansion of said
protective coating is less than the coefficient of thermal expansion of silicon
carbide (SiC).

14-21. (Canceled)

22. (Currently Amended) A ~~coating for a~~ carbon-containing component comprising a protective coating, wherein the carbon-containing component includes graphite, amorphous carbon, carbon fibers, carbon-carbon composites, or a combination thereof; and

5 wherein said protective coating comprises at least one material selected from the group consisting of:

non-stoichiometric compounds of silicon and carbon;
non-stoichiometric compounds of silicon and oxygen;
non-stoichiometric compounds of silicon and nitrogen;
10 compounds of silicon, oxygen, and carbon;
compounds of silicon, oxygen, and nitrogen;
compounds of silicon, nitrogen, and carbon;
compounds of silicon, oxygen, nitrogen, and carbon; and
silicon

15 ~~wherein said carbon-containing component comprises a carbon-carbon composite material.~~

23. (Currently Amended) The carbon-containing component of ~~coating of~~ claim 22, wherein said protective coating comprises at least two layers, wherein each of said layers comprises a material selected from said group.

24. (Currently Amended) The carbon-containing component ~~coating of~~ claim 23, wherein each of said layers comprises a compound selected from the group consisting of silicon carbide (SiC_y); silicon oxycarbide (SiO_xC_y); silicon carbonitride (SiC_yN_z); and silicon oxycarbonitride ($\text{SiO}_x\text{C}_y\text{N}_z$),
5 wherein $x < 2$, $y < 1$ and $z < 4/3$, and at least one of x , y , and z is greater than zero.

25. (Currently Amended) The carbon-containing component ~~coating~~ of claim 24, wherein at least a portion of the carbon (C) in said compound of said layers is chemically bound.

26. (Currently Amended) The carbon-containing component ~~coating~~ of claim 22, wherein said carbon-containing component comprises a plate-fin heat exchanger.

27. (Currently Amended) The carbon-containing component ~~coating~~ of claim 22, wherein said protective coating is applied directly to a surface of said carbon-containing component.

28. (New) The carbon-containing component of claim 22, wherein said protective coating has a coefficient of thermal expansion which is less than the coefficient of thermal expansion of silicon carbide (SiC).